

AMENDMENTS TO THE CLAIMS

Please cancel claims 1-12 and 18-29 without prejudice.

Claims 1-12 (Cancelled).

13. (Previously amended) An apparatus, comprising:

first, second and third optical interleavers, each of the first, second and third interleavers including:

first and second multi-mode interference (MMI) coupling devices disposed in a semiconductor substrate, each of the first and second MMI coupling devices of each of the first, second and third optical interleavers including first and second inputs and first and second outputs;

a first optical coupler having a first optical path length, the first output of the first MMI coupling device optically coupled to the first input of the second MMI coupling device through the first optical coupler; and

a second optical coupler having a second optical path length, the second output of the first MMI coupling device optically coupled to the second input of the second MMI coupling device through the second optical coupler, wherein the first optical path length is different than the second optical path length,

wherein the first output of the second MMI coupling device of the first optical interleaver is optically coupled to the first input of the first MMI coupling device of the second optical interleaver,

wherein the second output of the second MMI coupling device of the first optical interleaver is optically coupled to the second input of the first MMI coupling device of the third optical interleaver.

14. (Original) The apparatus of claim 13 wherein the first input of the first MMI coupling device of the first optical interleaver is optically coupled to receive an optical beam having a plurality of channels, each one of the plurality of channels having a corresponding wavelength,

wherein the first output of the second MMI coupling device of the second interleaver is optically coupled to output a first one of the plurality of channels of the optical beam,

wherein the second output of the second MMI coupling device of the second interleaver is optically coupled to output a second one of the plurality of channels of the optical beam,

wherein the first output of the second MMI coupling device of the third interleaver is optically coupled to output a third one of the plurality of channels of the optical beam,

wherein the second output of the second MMI coupling device of the third interleaver is optically coupled to output a fourth one of the plurality of channels of the optical beam.

15. (Original) The apparatus of claim 13 wherein the first input of the first MMI coupling device of the first optical interleaver is optically coupled to receive an optical beam having a plurality of channels, each one of the plurality of channels having a corresponding wavelength,

wherein the first output of the second MMI coupling device of the second interleaver is optically coupled to output a first subset of the plurality of channels of the optical beam,

wherein the second output of the second MMI coupling device of the second interleaver is optically coupled to output a second subset of the plurality of channels of the optical beam,

wherein the first output of the second MMI coupling device of the third interleaver is optically coupled to output a third subset of the plurality of channels of the optical beam,

wherein the second output of the second MMI coupling device of the third interleaver is optically coupled to output a fourth subset of the plurality of channels of the optical beam.

16. (Original) The apparatus of claim 13 wherein the first output of the second MMI coupling device of the second interleaver is optically coupled to receive a first optical beam having a first wavelength,

wherein the second output of the second MMI coupling device of the second interleaver is optically coupled to receive a second optical beam having a second wavelength,

wherein the first output of the second MMI coupling device of the third interleaver is optically coupled to receive a third optical beam having a third wavelength,

wherein the second output of the second MMI coupling device of the third interleaver is optically coupled to receive a fourth optical beam having a fourth wavelength,

wherein the first input of the first MMI coupling device of the first optical interleaver is optically coupled to output a multichannel optical beam including the first, second, third and fourth wavelengths combined.

17. (Original) The apparatus of claim 13 further comprising:

a first optical switch having first and second inputs and first and second outputs, the first and second outputs of the first optical switch optically coupled to the first and second inputs, respectively, of the first MMI coupling device of the first optical interleaver;

a second optical switch having first and second inputs and first and second outputs, the first and second inputs of the second optical switch optically coupled to the first and second outputs, respectively, of the second MMI coupling device of the second optical interleaver; and

a third optical switch having first and second inputs and first and second outputs, the first and second inputs of the third optical switch optically coupled to the first and second outputs, respectively, of the second MMI coupling device of the third optical interleaver.

Claims 18-29 (Cancelled).